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ABSTRACT

Although numerous studies target classroom teacher performance or principals' ability to improve instruction, little attention is given superintendents' leadership and managerial skills. Especially neglected are relationships among superintendents--despite their serving a critical function. This study examines the interpersonal network existing among district superintendents in Washington State. Using a sociometric test survey, the study examines mutually identified groups (cliques), individuals connecting between groups (bridges), isolated individuals (isolates), and the entire superintendent network throughout the state. Also examined are individual superintendent traits (age, ethnicity, gender, salary, years of experience, and district size) and district conditions influencing the network's establishment and continuation. The study draws on three factors possibly influencing the degree of superintendent connectedness: affiliation, accessibility, and status. Analysis of affiliation attributes (nonwhite ethnicity, gender, age, and degree and credentialing institution) indicates that affiliation is the weakest of the three categories. However, accessibility (measured by educational service district membership) and status (measured by salary, years of experience, and student enrollment size) are important factors influencing the establishment of connections within the network. One-third of the superintendents studied were isolated from networks, and female superintendents failed to choose friends among themselves. Implications for induction, mentoring, and support of superintendents are discussed. (23 references) (MLH)

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EXAMINATION OF RELATIONSHIPS AMONG SCHOOL SUPERINTENDENTS: A NETWORK ANALYSIS

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Examination of Relationships Among School Superintendents: A Network Analysis

In a time of intense examination of schools and their effectiveness, many studies focus upon the performance of classroom teachers or the ability of principals to improve building-wide instruction, but very little attention is given to the study of superintendents and their ability or methods of effectively leading and managing school districts. This lack of focus on superintendents is not new. Gross, Mason, and McEachern (1958), advocate the need to further study the superintendency noting that the position cannot be completely described until other positions to which the superintendency is related have been examined. Yet today the relationships among superintendents is essentially unexplored.

Several studies examine roles assumed by superintendents. Other studies examine the interpersonal relationships among school district personnel and the impact that these relationships may have on organizational outcomes. Katz (1957) looks at the impact of personal influence and opinion leadership in the two-step flow of communication between superintendents and the ways in which educational change occurs. Carlson (1964) studies the social network among superintendents and how influence and prestige affects the spread of new ideas and acceptance of innovations from one district to another. Morrish (1976) examines the adoption of innovation due in part to the role superintendents play in association with an already established reference group which may be located outside their immediate circle of influence.

One aspect of the superintendency needing examination is the interpersonal network among district superintendents. It is common knowledge that superintendents seek out respected colleagues in order to gain technical information, ask for advice, or offer assistance. Superintendents attend statewide and national conferences at which they make contact with peers and keep abreast of events in other districts. Rosser (1980) notes that the network among administrators is important for advancement in administration and that men establish them and use them to their advantage. Wimpelberg (1987) notes that ". . . leadership-prone educators make connections with each other; communicate about meaning and instructional techniques; know what is happening in schools and classrooms because they spend time finding out." (p. 113) This interpersonal network seems to be established out of need and is a critical function of the superintendency (Morris, 1979).

Purpose

Superintendents often seek expertise from others in order to handle job demands. The requirements placed upon superintendents are demanding and varied. They fulfill job requirements through various means. At times they call upon fellow superintendents for information and support (Carlson, 1972). Understanding that they are somewhat isolated within the school organization (Blumberg, 1985) and that they most often approach subordinates and board members with caution, superintendents turn to trusted colleagues for advice and moral support.

Analyzing superintendents' networks enhances the understanding of superintendent social connections. This provides a unique approach of simultaneous observation of individual superintendent interactions and an entire system of interactions among superintendents. Social network interaction is viewing bridging structures among individuals and among larger social units. (McIntyre, 1986)

In order to better understand the superintendency, a study of superintendent peer networks is undertaken. This paper describes the structure of a superintendent network; what the network looks like, and how superintendent attributes such as age, ethnicity, gender, salary, years of experience, and size of school district influence the network.

In this study, superintendent attributes are classified into three conceptual categories or factors that seem important to the development and maintenance of networks. The three factors, affiliation, accessibility, and status, are seen as contingencies for access to other superintendents; thereby forming groups of individuals with similar needs, desires, or characteristics.

In this study, questions are posed regarding the kind and degree of affiliation, accessibility and status individuals possess in order to become a network member. Additional research questions are outlined below.

1. To what extent is the network influenced by group affiliation? Indication of group affiliation are ethnicity, gender, age and the institution at which superintendents earned their degree or administrative credentials?

2. To what extent is the network influenced by the degree of accessibility individual superintendents have to other superintendents? Accessibility may be indicated by superintendents proximity or nearness to others providing opportunities for contact and on-going interaction. As an example, membership to a particular educational service district may provide increased opportunities for interaction or a superintendent new to the state may have limited working knowledge of the geographical area and lack the open access to other superintendents.
3. To what extent is the network influenced by superintendent's status? Status may be indicated by salary, years of experience in education, years of experience as a superintendent, and size of school district for which the superintendent is responsible.

The interpersonal network (Wellman & Berkowitz, 1988) is understood to be the connections within the network from the point of view of a particular individual (node or egocentric network) and combined connections (cliques or clusters) which describe the network from a total population point of view. Data were collected and analyzed in order to describe the structure of the interpersonal networks among superintendents. The study also examines attributes of superintendents and how these attributes grouped under the conceptual categories of affiliation, accessibility and status, act as contingencies for the establishment and maintenance of networks.

Theoretical Framework

Network analysis theory (Burt & Minor, 1983; Burt, 1982), communication network theory (Rogers and Kincaid, 1981) and diffusion network theory (Rogers, 1983) each lend themselves to the study of ways in which people establish cluster and isolation patterns when sharing information and innovations or when determining close professional relationships.

Network analysis utilizes two assumptions about social behavior. First, according to Knoke and Kuklinski (1982), a person participates in a social system comprised of others who act as reference points for one's decisions. Second, the structure of the social system perceived through the regular patterns of interaction among participants helps to explain connections between individuals and groups of individuals. The closeness of identification, degree of identification, and strength of relation each help to identify the extent of the network.

Methods

This study utilizes a sociometric-like test (Moreno, 1934, 1953; Jennings, 1950; Lindzey & Borgatta, 1954; Gronlund, 1959) involving a self report survey data collection instrument. A sociometric test is a means for determining ". . . the degree to which individuals are accepted in a group (called their sociometric status) for discovering the relationships which exist among these individuals, and for disclosing the structure of the group itself." (Northway, 1967, p. 3) Warters (1964) advocates using a sociometric test when the questions asked have real value to the respondents. Jennings (1959)

supports the dynamic interaction aspects of this type of test technique.

In this study, superintendents were asked to identify three close personal friends or three most respected colleagues among district superintendents. In so doing they indicate whom within the superintendent population they have established lasting and viable links.

In addition to the naming of three close personal friends or most respected colleagues, the survey asked superintendents to provide personal information including their gender, ethnicity, age, years of experience in education, years of experience as a superintendent, salary, district enrollment, Educational Service District (ESD) affiliation, most recent degree earned and in what year and from which institution the degree was earned and most recent professional credential earned and in what year and from which institution the credential was earned.

Data Analysis

The population of this study is the superintendent of each school district (N=290) and Educational Service District (ESD) Superintendents (N=9) throughout Washington State. The total population for this study is two hundred ninety-nine (N=299). Two hundred sixty-six (266) surveys, nearly eighty-nine percent, were returned.

The data are analyzed in three phases: characteristic description, identification matrix or blocking, and sociometric graphing or sociogram designing. The first phase includes the

general description of the information collected. This includes the description of personal traits or experiences attributed to members of the population.

The second phase includes charting each subjects choices by placing them in a matrix. This phase allows for the summing of all choices made and indicates who receives the choices.

The third phase includes the making of a sociometric graph which indicates who chooses whom through the use of geometric forms (representing individuals) and lines (representing choices) between persons choosing or being chosen. This phase graphically identifies individuals as isolates or stars. Also diads and clusters are identified and the profile of the entire network is highlighted.

Washington State District Superintendents

The data gathered for this study provides a general description of superintendents in Washington State. These superintendents are 93% male, 98% white, and range in age from 32 to 69 years old. They have a range of one to 43 years of experience in the field of education, and a range of 1 to 31 years of experience as a superintendent.

Superintendents report that their salary ranges from a low of $5,226, which reflects the salary of part-time lead teachers designated as district superintendent to a maximum of $95,135. The mean salary for superintendents is reported as $55,307.

District student enrollment ranges from a low of 11 students to a high of 27,262. This number does not include the ESD

Superintendents enrollment report as that would show a duplication of students since ESDs and local districts serve the same students.

The number of local districts served by Educational Service Districts range from a low of 16 to a high of 59.

Fifty-nine percent of superintendents report that their most recent degree earned is a masters degree, 37% report a doctorate, and 4% fall in the "other" category. Forty three percent of doctoral degrees were earned at institutions outside Washington, 32% were earned at Washington State University, 15% were earned at The University of Washington, and 10% were from private institutions within the state of Washington. Forty percent of masters degrees earned by superintendents were granted by regional institutions within the state, 35% by out of state institutions, and the remaining 25% are divided between private institutions, Washington State University, and the University of Washington.

Sociometric Choices Among Superintendents

Analysis of the choice matrix data from two hundred sixty-six (266) surveys returned indicates that two hundred twenty-eight (228) superintendents are named as a first choice, two hundred twenty-one (221) as a second choice, and two hundred twenty-six (226) as a third place choice. The differences in number of choices may be due to someone being named who lies outside the population and therefor are not included in this count. Also the totals are less than the two hundred sixty-six because some superintendents failed to name any first, second or third choices.

The individual recordings of being chosen ranges from no namings to thirty-nine namings. A breakdown of the individual namings are as follows: eighty-eight (88) superintendents or 29.% of all superintendents in the state received no namings, seventy-one (71) or 24% superintendents received one naming, forty-four (44) or 15% of superintendents received two namings, thirty-nine (39) or 13% superintendents received three namings, twenty (20) or 7% of superintendents received four namings, and eleven (11) or 4% of superintendents received five namings.

The number of superintendents receiving a large number of namings drops off drastically. Four (4) or 1% of the superintendents each received six, seven, and eight namings, five (5) or 2% of superintendents received nine namings, three (3) or 1.0% of the superintendents received ten namings, and two (2) or 1% of the superintendents received eleven namings. Four superintendents received thirteen or more namings including one (1) or .3% with thirteen, one with fifteen, one with sixteen, and one with thirty-nine namings by fellow superintendents.

The choice matrix is formed by placing all 299 superintendents' names along both a horizontal and vertical axis. The intersection of each of these names creates 89,401 cells in the matrix. Each cell is referred to as a choice opportunity. In order to determine the degree of connectedness of any choice matrix, the total number of actual choices is divided by the total number of choice opportunities minus the cells in which the subjects could name themselves, in this case 299. The formula for determining the degree of connectedness of a matrix then is $\Sigma c/(S_n^2-S_n)$, where Σc is the sum of actual choices

made, and S_n is the total number of superintendents in the population of the matrix.

The degree of connectedness of the general population of superintendents in Washington is .0076. [(228 1st choices + 221 2nd choices + 226 3rd choices)/(299^2-299)] This number (.0076) serves as a baseline or reference for comparison with the degree of connectedness of subgroupings of superintendents within the population.

Since this study is exploratory, as a matter of conjecture three factors are suggested that might influence the degree of connectedness among superintendents: affiliation, accessibility, and status. Each of these factors is associated with certain attributes. In order to explore the influence each of the three factors has on the degree of connectedness within the network, subgroups of the population determined by similarity of attributes they possess, were examined. For example, a choice matrix is constructed for female superintendents. The choices females make within this female subgroup are plotted on the matrix and counted. This count (the actual choices) are divided by the total number of choice opportunities minus the possible self-choices. This determines the degree of connectedness for female superintendents, which happens to be .0092. This number is compared to the baseline (.0076) and the degree of connectedness of other attributes in order to determine its relative strength and likely influence in establishing connections within the network. (Degrees of connectedness for all attributes examined in this study are reported in Table 1.) No attempt is made

to determine the statistical significance of these numbers. They are used in a relative sense only.

Table 1. CONNECTEDNESS RATIO OF NAMINGS TO TOTAL NAMING OPPORTUNITIES AMONG SUPERINTENDENTS

FACTORS	ATTRIBUTES	DEGREE OF CONNECTEDNESS		
		High 10%	Low 10%	Overall-Total
All Superintendents				0.0076
Affiliation				
	Ethnicity			0.0000
	Gender (female)			0.0092
	Age	0.0123	0.0086	
	Institution			
	Degree/Credential			
	University of Washington			0.0127
	Washington State University			0.0106
Accessibility				
	Proximity			
	ESD 1			0.0246
	ESD 2			0.0520
	ESD 3			0.0499
	ESD 4			0.0285
	ESD 5			0.0919
	ESD 6			0.0517
	ESD 7			0.0562
	ESD 8			0.0252
	ESD 9			0.0413
Status				
	Enrollment	0.0556	0.0037	
	Salary	0.0473	0.0081	
	Experience in Education	0.0209	0.0172	
	Experience as Superintendent	0.0226	0.0029	

Affiliation

Affiliation includes non-white ethnicity, gender, age, and degree and credentialling institution. Analysis of these four attributes indicates that affiliation is the weakest of the three categories in network membership. Non-white ethnicity has a connectedness of .0000 with no namings among the non-white superintendents in the state. Admitedly there exists a small population of non-white superintendents in the state. This is possibly to small a population to indicate any significance.

The twenty-six female superintendents in the state named one another six times. This represents a connectedness ratio of .0092. The number of female superintendents is very small and this number may not allow for appropriate analysis.

Namings among superintendents within age affiliation is analyzed somewhat differently. Ten percent of the oldest superintendents and ten per cent of the youngest superintendents are analyzed to examine the namings within each age band. The analysis shows that older superintendents named each other at a greater rate than did the younger superintendents with a degree of connectedness of .0123 and .0086 respectively.

Namings among superintendents having a degree or administrative credential from the same university is represented by a connectedness ratio of .0106 for those superintendents affiliated with Washington State University and .0127 for those affiliated with the University of Washington.

Accessibility

Accessibility is measured by Educational Service District (ESD) membership. Local school districts in Washington are members of one of nine ESDs. ESD membership is associated with both geographic proximity and bonds which both legal and service functions bring. Typically, superintendents within each ESD meet monthly in order to share information, advise the ESD superintendent, and receive information from the state.

The degree of connectedness for the superintendents in each of the nine ESDs was calculated. They ranged from .0246 to .0917. The degree of connectedness for ESD membership seems substantially greater than that of the baseline or of the attributes associated with affiliation.

Status

A person's status is often associated with their position, rank, or standing within a group. In this study the attributes associated with status are salary, years of experience in education, years of experience in the superintendency, and student enrollment of school district. Choice matrices for superintendents falling in the top and bottom ten percent of the rankings of each of these attributes were constructed. The degree of connectedness for each group was calculated.

The difference between the degree of connectedness for superintendents grouped by experience in education seems slight. Superintendents with the most educational experience have a degree

of connectedness of .0209, compared to .0172 for those with the least.

Within the other three attributes -- enrollment, salary, and experience as a superintendent -- there appears to be substantial differences between the degree of connectedness of the top and bottom groups. The greatest difference occurs with enrollment; superintendents of districts in the top ten percent of enrollment have a degree of connectedness of .0556 compared to .0037 for the bottom ten percent.

These results indicate that superintendents of high status choose friends or respected colleagues among themselves, while superintendents of low status chose friends or respected colleagues among superintendents of higher status than themselves.

Conclusions and Implications

The examination of the network among superintendents in Washington state reveals that status and accessibility are important factors influencing the establishment of connections within the network. Affiliation, as indicated by ethnicity, gender, age, and degree or credentialling institution appears to be a rather weak factor. The superintendent well established in the network likely works in large district, receives a high salary, and has lengthy tenure as a superintendent. In contrast, the isolates in the network likely work in small districts, receive a low salary, and have a brief tenure as a superintendent.

The attributes of gender and ethnicity appear weak in influencing the degree of connectedness. The results reveal that the

network among female superintendents is not much stronger than that among the general population of superintendents. There were no choices made among the nine superintendents that identified themselves as non-white.

Accessibility, as indicated by Educational Service District membership, appears to have a strong influence on establishment of connections within the network.

The results reported in this study have implications for induction, mentoring, and support of superintendents. Throughout the literature the superintendency is portrayed as a lonely position. Since nearly one-third of superintendents receive no choices at all, it seems likely that many superintendents cannot even look to their peers for friendship and support.

There is much talk about creating networks to support female administrators. The Northwest Women in Educational Administration was created primarily for that purpose. Yet it seems that female superintendents in Washington fail to choose friends among themselves and likely then fail to support one another.

This year the Washington Association of School Administrators (WASA) began a mentoring program for superintendents new to the state or to the position. Newcomers were assigned established superintendents as mentors. Regular meetings and advising are being held. Perhaps this formal mentorship will help establish newcomers in the superintendent network.

The analyses of data in a network study is an immense and often tedious task. Remaining is the construction of sociograms that will highlight the structure of the network by identifying isolates, stars,

cliques, and bridges between cliques. The sociogram analysis should prove revealing and will surely hold more implications for administrative practice.

References

Blumberg, A. (1985). The school superintendent: Living with conflict. New York: Teachers College.

Burt, R. S. (1982). Toward a structural theory of action. New York: Academic Press.

Burt, R. S. , & Minor, M. J. (1983). Applied network analysis. Beverly Hills, CA: Sage.

Carlson, R. O. (1964). School superintendents and adoption of modern math: A social structure profile. In M. B. Miles (Ed.), Innovation in education (pp. 329-341). New York: Columbia University.

Carlson, R. O. (1972). School superintendents: Careers and performance. Columbus, OH: Charles E. Merrill.

Gronlund, N. E. (1959). Sociometry in the classroom. New York: Harper & Brothers.

Gross, N. , Mason, W. S. , & McEachern, A. W. (1958). Explorations in role analysis: Studies of the school superintendency role. New York: John Wiley & Sons.

Jennings, H. H. (1950). Leadership and isolation. (2nd ed.). New York: Longmans, Green and Co.

Jennings, H. H. (1959). Sociometry in group relations. (2nd ed.). Westport, CT: Greenwood Press.

Katz, E. (Spring, 1957). The two-step flow of communication: An up-to-date report on an hypothesis. The public opinion quarterly. 21 (1), 61-78.

Knoke, D. & Kuklinski, J. H. (1982). Network analysis. Sage University paper series on quantitative applications in the social sciences (series no. 28). Beverly Hills: Sage Publications.

Lindzey, G. , & Borgatta, E. F. (1954). Sociometric measurement. In G. Lindzey (ed.), Handbook of social psychology. Cambridge, MA: Addison-Wesley, 405-448.

McIntyre, E. L. G. (1986, November-December). Social networks: Potential for practice. Social Work, 31, 421-426.

Moreno, J. L. (1934, 1953). Who Shall Survive? Beacon, N.Y: Beacon House.

Morris, J. R. (1979, Winter). Job(s) of the superintendency. Educational research quarterly, 4 (4), 11-24.

Morrish, I. (1976). Aspects of educational change. New York: John Wiley & Sons.

Northway, M. L. (1967). A primer of sociometry. (2nd ed.). Toronto, Canada: University of Toronto.

Rogers, E. M. (1983). Diffusion of innovations. New York: Free Press.

Rogers, E. M. , & Kincaid, D. L. (1981). Communication networks. New York: Free Press.

Rosser, P. (1980, March). Women fight "old boys" for school administrators jobs. Learning. 8 (7), 30-34.

Warters, J. (1964). Techniques of counseling (2nd ed.). New York: McGraw-Hill.

Wellman, B., & Berkowitz, S. D. (Eds.). (1988). Social structures: A network approach. New York: Cambridge University.

Wimpelberg, R. K. (1987). The dilemma of instructional leadership and the central role for central office. In W. Greenfield (ed.), Instructional leadership concepts, issues, and controversies. (pp. 100-117). Boston: Allyn and Bacon.